

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were cultured in YEA medium for 24 h at 28°C. The cell concentration of the strains was adjusted to 1.0 × 10<sup>8</sup> cells/ml. The cell suspension was mixed with the plant tissue and the transformation efficiency was determined. The results are shown as the mean ± SD of three independent experiments. The data were analyzed by the Student's *t*-test. The difference between the control and the treatment was significant at *P* < 0.05.

1. A reduced image forming apparatus comprising:  
extracting means for extracting a plurality of partial images from an original image;  
generating means for combining the plurality of partial images extracted by said extracting means and generating a combined image smaller than said original image; and  
indicating means for indicating the combined image generated by said generating means.
2. An apparatus according to claim 1, wherein said extracting means has:  
dividing means for dividing said original image into a plurality of image blocks; and  
obtaining means for obtaining the partial image from each of said plurality of image blocks.
3. An apparatus according to claim 2, wherein said dividing means divides said original image into a plurality of uniform image blocks.
4. An apparatus according to claim 2, wherein said obtaining means divides said image block into a plurality of partial images, and obtains the partial image at a same position

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in each image block.

5. An apparatus according to claim 2, wherein said obtaining means divides said image block into a plurality of uniform partial images, and obtains the partial image at a position set for each image block.

6. An apparatus according to claim 1, wherein said generating means decreases an image resolution within a range in which a character can be visually recognized as a character on said indicating means, and generates a combined image smaller than said original image.

7. An apparatus according to claim 1, wherein said extracting means further has application data extracting means for reading application data and extracting said application data.

8. An apparatus according to claim 7, wherein said application data is data which is formed in an application.

9. A reduced image forming method comprising:  
an extracting step of extracting a plurality of partial images from an original image;  
a generating step of combining the plurality of partial

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a dividing step of dividing said original image into a plurality of image blocks; and

11. A method according to claim 10, wherein said dividing step divides said original image into a plurality of uniform image blocks.

13. A method according to claim 10, wherein said obtaining step divides said image block into a plurality of uniform partial images, and obtains the partial image at a position set for each image block.

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14. A method according to claim 9, wherein said generating step decreases an image resolution within a range in which a character can be visually recognized as a character on said indicating step, and generates a combined image smaller than said original image.

15. A method according to claim 9, wherein said extracting step further has application data extracting step of reading application data and extracting said application data.

16. A method according to claim 15, wherein said application data is data which is formed in an application.

17. A storage medium storing a control program for making a computer form a reduced image based on an original image, wherein said control program comprises the codes for:

an extracting step of extracting a plurality of partial images from an original image;

a generating step of combining the plurality of partial images extracted by said extracting step and generating a combined image smaller than said original image; and

an indicating step of indicating the generated combined image generated by said generating step.

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a dividing step of dividing said original image into a plurality of image blocks; and

19. A medium according to claim 18, wherein said dividing step divides said original image into a plurality of uniform image blocks.

20. A medium according to claim 18, wherein said obtaining step divides said image block into a plurality of partial images, and obtains the partial image at a same position in each image block.

21. A medium according to claim 18, wherein said obtaining step divides said image block into a plurality of uniform partial images, and obtains the partial image at a position set for each image block.

22. A medium according to claim 17, wherein said generating step decreases an image resolution within a range in which a character can be visually recognized as a character on said indicating step, and generates a combined image smaller than

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said original image.

23. A medium according to claim 17, wherein said extracting step further has application data extracting step of reading application data and extracting said application data.

24. A medium according to claim 23, wherein said application data is data which is formed in an application.

25. A reduced image forming apparatus comprising:  
converting means for converting an original image into a character train;

extracting means for extracting a partial character train from the character train converted by said converting means;

generating means for combining a plurality of partial character trains extracted by said extracting means, converting the combined partial character trains into an image, and generating a combined image smaller than said original image; and

indicating means for indicating the combined image generated by said generating means.

26. An apparatus according to claim 25, wherein said converting means has:

character train recognizing means for recognizing a

Figure 1 illustrates the steps of the proposed algorithm for finding a minimum spanning tree. The diagrams show a graph with 10 nodes and 15 edges, with a subset of edges highlighted. The steps are as follows:

- (a) Initial graph with 10 nodes and 15 edges. A subset of edges is highlighted.
- (b) A new edge is added to the highlighted subset.
- (c) A new edge is added to the highlighted subset.
- (d) A new edge is added to the highlighted subset.
- (e) A new edge is added to the highlighted subset.
- (f) A new edge is added to the highlighted subset.
- (g) The final minimum spanning tree, which consists of 9 edges.

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obtaining means for obtaining the partial character train from each of said plurality of character train blocks.

28. An apparatus according to claim 27, wherein said dividing means divides the character train replaced by said replacing means into a plurality of uniform character train blocks.

29. An apparatus according to claim 27, wherein said obtaining means divides said character train block into a plurality of partial character trains, and obtains the partial character train at a same position in each character train block.

30. An apparatus according to claim 27, wherein said

32. An apparatus according to claim 25, wherein said extracting means further has application data extracting means for reading application data and extracting the character train included in said application data.

34. A reduced image forming method comprising:

- a converting step of converting an original image into a character train;
- an extracting step of extracting a partial character train from the character train converted by said converting step;
- a generating step of combining a plurality of partial



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character trains extracted by said extracting step, converting the combined partial character trains into an image, and generating a combined image smaller than said original image; and

an indicating step of indicating the combined image generated by said generating step.

35. A method according to claim 34, wherein said converting step has:

a character train recognizing step of recognizing a character train; and

a replacing step of replacing a two or more sequent spaces recognized by said recognizing step or a carriage return line feed control code and a plurality of spaces subsequent thereto with one space.

36. A method according to claim 34, wherein said extracting step has:

a dividing step of dividing the character train replaced by said replacing step into a plurality of character train blocks; and

an obtaining step of obtaining the partial character train from each of said plurality of character train blocks.

37. A method according to claim 36, wherein said dividing

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38. A method according to claim 36, wherein said obtaining step divides said character train block into a plurality of partial character trains, and obtains the partial character train at a same position in each character train block.

39. A method according to claim 36, wherein said obtaining step divides said character train block into a plurality of uniform partial character trains, and obtains the partial character train at a position set for each character train block.

40. A method according to claim 34, wherein said generating step decreases an image resolution within a range in which a character can be visually recognized as a character on said indicating step, and generates a combined image smaller than said original image.

41. A method according to claim 34, wherein said extracting step further has application data extracting step of reading application data and extracting the character train included in said application data.

42. A method according to claim 41, wherein said

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application data is data which is formed in an application.

43. A storage medium comprising the codes for:

a converting step of converting an original image into a character train;

an extracting step of extracting a partial character train from the character train converted by said converting step;

a generating step of combining a plurality of partial character trains extracted by said extracting step, converting the combined partial character trains into an image, and generating a combined image smaller than said original image; and

an indicating step of indicating the combined image generated by said generating step.

44. A medium according to claim 43, wherein said converting step has a character train recognizing step of recognizing a character train.

45. A medium according to claim 43, wherein converting step has a code for a replacing step of replacing a two or more sequent spaces recognized by said recognizing step or a carriage return line feed control code and a plurality of spaces subsequent thereto with one space.

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46. A medium according to claim 43, wherein said extracting step has the codes for:

a dividing step of dividing the character train replaced by said replacing step into a plurality of character train blocks; and

an obtaining step of obtaining the partial character train from each of said plurality of character train blocks.

47. A medium according to claim 46, wherein said dividing step divides the character train replaced by said replacing step into a plurality of uniform character train blocks.

48. A medium according to claim 46, wherein said obtaining step divides said character train block into a plurality of partial character trains, and obtains the partial character train at a same position in each character train block.

49. A medium according to claim 46, wherein said obtaining step divides said character train block into a plurality of uniform partial character trains, and obtains the partial character train at a position set for each character train block.

50. A medium according to claim 43, wherein said generating step decreases an image resolution within a range in which a character can be visually recognized as a character on

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said indicating step, and generates a combined image smaller than  
said original image.

51. A medium according to claim 43, wherein said  
extracting step further has application data extracting step of  
reading application data and extracting the character train  
included in said application data.

52. A medium according to claim 51, wherein said  
application data is data which is formed in an application.

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